ADJUSTABLE SUPPORT

BACKGROUND OF THE INVENTION

Field of the Invention

This is a Continuation in Part of Serial No. 10/228,386 scheduled to issue as patent No. 6,682,147 on 01/27/2004. The invention relates to an adjustable support and, more particularly, to a foot rest support which can be adjusted in both height and width.

Description of the Need for the Invention

Many persons, particularly elderly and disabled persons, often desire to have an accessory, such as a foot rest, which can be used in a variety of ways. In one usage, a person might wish to elevate the foot or both feet in order to alleviate a physical condition, such as pain that is occasioned by having the foot occupy a restrained position for a prolonged period of time. In other usages, the foot rest can provide a suitable support when the person is seated or is in a position where such support is desired.

The prior art provides a number of footrest. One type is provided by a frame that is inserted into separated slots of a plate, but this arrangement is not adjustable in height or width

Other solutions have been proposed which typically are complex and costly.

Accordingly, it is a principal object of the invention to provide a support that is inexpensive and simple to construct and can meet the requirements of persons who wish to adjustably support body appendages such as legs in order to satisfy a physical or exercise requirement.

SUMMARY OF THE INVENTION

In accomplishing the foregoing and related objects, the invention provides a rest member having a support surface; and a stand for the rest member; which has apertures therein to permit the adjustment in height thereof with respect to the stand; and the stand has means thereon for inhibiting any tendency for the stand to become separated from the rest member during usage thereof.

In accordance with one aspect of the invention, the inhibiting means is compressible to permit the stand to be inserted thru the rest member and expandable thereafter to inhibit separation of the rest member from the stand. The inhibiting means can comprise at least one object. Alternatively, the inhibiting means can be a projection from the stand to inhibit separation of the rest member once it is positioned on the stand. The projection can can have the same or a lesser width that portion of the rest member that is inserted on the stand.

Where the stand has a tubular portion the object can be attached to the tubular portion, and the object can projects from the stand, being compressible if the object is wider than the tubular portion and being non-compressible if the object is equal or narrower than the tubular portion, which can have a variety of cross sections and include a rectilinear channel member having an open side. Alternatively, the stand can be a solid member.

In accordance with another aspect of the invention, the inhibiting member is movable inwardly and outwardly, and can comprise an elastomeric object, or a plurality of elastomeric objects, such as a rubber ring.

In accordance with a further aspect of the invention, the stand can have an apex and the inhibiting means can be positioned at the apex.

In a method of the invention for supporting an object, the steps can include (a) providing a rest member having a support surface; (b)forming a plurality of differently dimensioned constructs in the support surface; and (c) positioning the rest member on a stand therefor to permit the adjustment in height of the rest member with respect to the constructs

The method can include the step of positioning means for inhibiting the accidental separation of the stand from said rest member after the stand has engaged the constructs, which can be apertures.

The stand can have at least one apex and further include the step of positioning inhibiting means at the apex, with the inhibiting means comprising an elastomeric object and further include the step of engaging at least one of the constructs by the elastomeric object, which can take the form of a rubber ring and further include the step of engaging at least one construct by the rubber ring.

At least one of the constructs can be an aperture smaller than the maximum dimension of the rubber ring when positioned on the stand and further include compressing the rubber ring to allow insertion into the aperture, followed by the step of pushing the rubber ring thru the aperture.

The rubber ring can be variably positioned on the stand.

The method can further include the step of providing the rest member with a plurality of elongated apertures of different lengths, with the stand inserted into two of the apertures and inhibited from separation therefrom by the inhibiting means .

DESCRIPTION OF THE DRAWINGS

Other aspects of the invention will become apparent after considering several illustrative embodiments taken in conjunction with the drawings in which:

Fig. 1 is a perspective view of an adjustable support in accordance with the invention that permits forward and backward movement of its support surface and inhibits separation of the support surface from its stand;

Fig. 1A is a perspective view of an adjustable support in accordance with the invention that permits forward and backward movement of its support surface and alternatively inhibits separation of the support surface from its stand;

Fig. 2 is a perspective view of the support for the embodiment of Fig. 1;

Fig. 2A is a perspective view of the support for the embodiment of Fig. 1A;

Fig. 3 is a perspective view of the support of Fig. 1 for which the support surface has been lowered by being moved to the outermost support position of the stand with inhibition of separation of the support surface from its stand at the lowered position;

Fig. 4 is a perspective view of the support of Fig. 3 which has been positioned for possible side-to-side movement of an object placed on the support surface with double inhibition of separation of the support surface from its stand;

Fig. 5 is a perspective view of an alternate embodiment in which the elongated support surface of Fig. 4 has been positioned for possible forward and backward movement;

Fig. 6 is a perspective view showing separation of the tubular members forming the stand and indicating the use of two objects for inhibiting the separation of the support surface from its stand at two different levels.

DETAILED DESCRIPTION

As shown in the perspective view of Fig. 1, an adjustable support 10 in accordance with the invention is formed by a support member 20 having a support surface 22 and a plurality of pairs P1 thru P3 of elongated apertures in the support surface 22. In the embodiment of Figure 1 there are three pairs of apertures P1, P2 and P3, with the first pair P1 formed by elongated apertures P1-1 and P1-2, the second, shorter pair P2 formed by elongated apertures P2-1 and P2-2, and the third pair P3-1 and P3-2 formed by a still shorter pair P3. The longer pair P2 accompanies the shorter pairs P1 and P3 in order to permit adjustment in height of the support surface 22 with respect to a stand 30. The support member 20 is positioned at its aperture positions over apex portions 31-1 and 31-2 of the stand 30, which includes apex inhibiting grommets 41-1 and 41-2

As illustrated in Fig. 1, the support member 20 has its apertures P1-1 and P1-2 on the apex members 31-1 and 31-2 so that the support surface is in its intermediate lower position. When the stand 30 is adjusted so that the apex members 31-1 and 31-2 respectively occupy the apertures P3-1 and P3-2, the support surface is in an elevated position.

Whether the stand occupies the first pair of apertures P1, the second pair of apertures P2, or the third pair of apertures P3, the support 10 permits forward movement as indicated by the arrow F, and backward movement as indicated by the arrow B of the support surface 22, with separation of the support 10 from the members 31-1 and 31-2 inhibited by the grommets 41-1 and 41-2. Although the grommets41-1 and 41-2 are shown at the apex positions, i.e. the peaks of the stand 30, they may be positioned at other locations on the stand as illustrated in Figures 3-6.

In addition the grommets 41-1 and 41-2 may be used singly or multiply and are illustratively constructed of elastomeric material to be larger, when place on the stand 30 than the apertures through which they are moved. This takes place by compression as the grommets are moved through their apertures, followed by expansion once they have cleared the apertures. Although the grommets are desirably elastomeric, non elastomeric grommets may also be employed to provide a measure of separational inhibition.

As shown in Fig. 2, which is a perspective view of the support 10 for the embodiment of Fig. 1, the stand 30 is formed by a pair of tubular members 32-1 and 32-2. The members 32-1 and 32-2 are adjustable inwardly and outwardly by virtue of rods 33 which are inserted between adjoining legs of the tubular members 32-1 and 32-2. Each tubular member 32-1 or 32-2 has a leg 34-1 or 34-2 extending to an upwardly disposed connector 35-1 that forms an acute angle A with respect to the leg 34-1 or 34-2. The upward connector 35-1 or 35-2 can be extended to a downwardly disposed connector 36-1 or 36-2 attached to a leg 37-1 or 37-2. At the apexes 31-1 and 31-2 of the legs 34-1 and 34-2 there arer respective grommets 41-1 and 41-2.

Insertion of the rod 33 into a leg 34-1 of the stand 30 permits connection to an opposite leg 34-2, and relative movement between the connected legs 34-1 and 34-2. Similarly, insertion of the rod 33 into a leg 37-1 permits connection to an opposite leg 37-2. Because of the adjustability of the stand 30, the support member 20 is provided, as discussed above with a plurality of elongated apertures P1 and P2 of different lengths into which the stand 30 is insertable. As in the case of Fig. 1, the support surface 22 can be moved forwardly in the direction of the arrow F or backwardly in the direction of the arrow B.

As shown in the perspective view of Fig. 1A an alternative support 10' in accordance with the invention is formed by a support member 20' having a support surface 22' and a plurality of pairs P1 thru P2 of apertures in the support surface 22'.

In the embodiment of Figure 1A there are two pairs of apertures P1and P2, with the first pair P1 formed by apertures P1-1 and P1-2, and the second, longer pair P2 formed by apertures P2-1 and P2-2. The longer pair P2 accompanies the shorter pair P1 in order to permit adjustment in height of the support surface 22' with respect to a stand 30'. The support member 20' is positioned at its aperture positions over apex portions 31-1 and 31-2 of the stand 30, which includes apex inhibiting projections 42-1 and 42-2

As illustrated in Fig. 1A, the support member 20' has its apertures P1-1 and P1-2 on the apex members 31-1 and 31-2 so that the support surface 22' is in its highest position. When the stand 30' is adjusted so that the apex members 31-1 and 31-2 respectively occupy the apertures P2-1 and P2-2, the support surface 22' is in a lower position.

Whether the stand occupies the first pair of apertures P1, or the second pair of apertures P2, the support 10' permits forward movement as indicated by the arrow F, and

backward movement as indicated by the arrow B of the support surface 22', with separation of the support 10 from the members 31-1 and 31-2 inhibited by the projections 42-1 and 42-2. Although the projections 42-1 and 42-2 are shown at the apex positions, i.e. the peaks of the stand 30', they may be positioned at other locations.

In addition the projections 42-1 and 42-2 may be used singly or multiply and are illustratively constructed of rigid or flexible material to be equal in width or smaller, when place on the stand 30' than the apertures through which they are moved. The projections 42-1 and 42-2 may be formed by a bend of the tubular members 36-1 and 36-2.

As shown in Fig. 2A which is a perspective view of the stand 30'for the embodiment of Fig. 1A, the stand 30' is formed by a pair of members 32-1 and 32-2. Although the tubular members 36-1 and 36-2 have circular cross-sections, other cross sections are suitable, including elliptical and rectangular. Alternatively the 32-1 and 32-2 may be solid rods or take the form of rectangular channel members having an open forth side.

In addition, although the members 32-1 and 32-2 are adjustable inwardly and outwardly by virtue of rods 33 which are inserted between adjoining legs 32-1 and 32-2, the legs 32-1 and 32-2 may be separate structures that are independently movable with respect to the apertures P1 and P2. Although the upwardly disposed connector 35-1 in Fig. 2A forms an acute angle A with respect to the leg 34-1, the angle A may be increase to about ninety degrees and the legs 34-1 and 37-1 extended, for example at a right angle to provide base support for the connectors 35-1 and 36-1.

At the apexes 31-1 and 31-2 of the legs 34-1 and 34-2 there are respective projections 42-1 and 42-2. The projections 42-1 and 42-2 can take the form pins inserted thru the connectors 36-1 and 36-2, and capped with a rounded end to avoid stick injuries to the user.

For adjustability of the stand 30' of Fig. 1A, the support member 20' is provided, as discussed above with a plurality of apertures P1 and P2 into which the stand 30' is insertable. As in the case of Fig. 1, the support surface 22 can be moved forwardly in the direction of the arrow F or backwardly in the direction of the arrow B.

As shown in Fig. 3, which is a perspective view of the support of Fig. 1, the support surface 22 has been lowered by being moved to the outermost support position provided by

the apertures P2 of the stand 30. The grommets 41-1 and 41-2 have been lowered to stabilize the new position of the support surface 22.

By contrast, with Fig. 3, Fig. 4 is a perspective view of the support of Fig. 3, which has been positioned for possible side-to-side movement indicated by the arrows S of an object placed on the support surface 22. Each leg of the stand 30 includes two grommets 41-1 and 42-1 on one leg, and grommets 41-2 and 42 –2 on the other leg.

In the alternative embodiment of Fig. 5, the elongated support surface 22 of Fig. 4 has been positioned for possible forward and backward movement, again indicated by the arrows F and B by the use of an elongated pair of apertures P1-1 and P1-2. In addition, a further set of shorter apertures P3-1 and P3-2 are positioned near the respective elongated edges 35-1 and 35-2 to permit forward and backward movement of the support surface 22 in the position of maximum elevation for the support 10.

To clarify the relationship of the rods 33 to the stand members 32-1 and 32-2, the portion 32-1 is shown in Fig. 6 separated from the portion 32-2, with one rod 33 removed and the other rod 33 retained in only one leg. In addition the leg 32-1 is shown with two grommets 41-1 and 43-1 at two separated positions on the leg below the apex 31-1. This provides inhibition of the separation of the support from the stand at two different postions. It is apparent that one or more grommets may be used for each different support position

It will be understood that the foregoing detailed description is illustrative only and that modifications may be made without the departing from the spirit and scope of the invention as defined in the appended claims.